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Floriculture for the Farmer.

THE assertion that farmers, as a rule, know as little about the processes of plant-life as any other class of men, would seem at first a gratuitous insult. Certainly the men whose livelihood depends on the successful production of crops ought to know something of the vegetable processes with which they constantly deal, and, no doubt, they do. Nevertheless, dealing as they do with crops in a large way, they often overlook the requirements of individual plants, and neglect to study their special needs. Anything, therefore, that promises to increase their specific knowledge of the functions of individual plants, of the manner in which they feed, the laws which govern their growth—in short, anything which would help to give them familiar lessons in plant physiology—would certainly be of incalculable advantage. That farmers have no such full knowledge of plants as florists have, is very evident. All the operations of lifting and potting and feeding and watering, the constant handling and examination of every part of every plant, the familiar acquaintance with the relations between the root and the top, the constant attention which plants insist upon when in a glass house under particularly artificial conditions; all these help to give the florist a familiar acquaintance with all his plants and with their particular habits and peculiarities, such as never is attained by the man who harvests the grain by the acre. And yet this intimate knowledge of individual plants would certainly make the farmer more successful in his calling.

At a recent address before a farmers' institute in Ithaca, Professor Bailey took up this subject and gave several reasons why floriculture should make an essential part of the curriculum of every agricultural college. This was not because he thought that every student should become a skilled florist, and make a business of it, but because a knowledge of floriculture would furnish a training for farm-work which could not be gained in any other way. In enumerating the distinct advantages which the study of floriculture would give to the farmer, we may mention, in the first place, that it would teach him more effectively than he can learn in any other way, how much can be produced from land. The farmer has a hundred acres, and then wants to buy all the land that adjoins him in order to raise larger crops, while the florist matures his plant from a handful of soil, and then uses the soil over again year after year without apparently exhausting it. A pailful of soil will bring an Orange-tree into bearing condition and keep it there for years when it is cared for and fertilized as the florist knows how. The farmer simply turns his land over with the plow, and harrows it once or twice, while the gardener mixes and sifts until there can be no mistake as to the mechanical conditions or the fertility of the soil he uses. When his potful of soil is prepared he knows just what it will produce, and never thinks of failure. If the soil in the farmer's field were half as well prepared, his crops would be greater by tenfold, and yet the farmer wears out his land, and the florist never thinks of exhausting his soil.

Again, as we have already suggested, and as Professor Bailey well pointed out, the florist learns his plants as individuals. Every one of them leads a distinct and separate life and is an object of individual care and solicitude. The florist does not think of his soil as the farmer thinks of his fields. What he has in mind is his plants. Every one of them has an individuality, and in this way not one of them is neglected, and all make a better and a more profitable growth. In the same line is the lesson of conscientious attention which must be given to every detail. The farmer cultivates his Corn-field rather than the separate plants, and makes no account of the fact that there are many vacant hills, and many hills only partly filled. The florist watches his plants, and he does not spend his time over empty pots. This lesson will become more important as the practice of agriculture becomes more complex and its theories more refined. It may sound fanciful, too, but it has a solid basis in fact, that this engendering of a special regard for plants as individual objects not only would increase the farmer's interest in the farm and in his crops, but would increase the joy of his life. Agriculture would then be a companionship with living things, and this would help to bring contentment and peace.

Again, as we believe that agriculture has its basis in science, anything which gives the farmer scientific instruction, which gives him accurate habits of observation and comparison and record, is of great value. The study of floriculture offers a rich field for scientific investigation, and especially for studying practically and in an experimental way the capacities of the plant for evolution, which means, when properly directed, its capacity for improvement in the direction of man's necessities. There is no question that agriculture, so far as it is successful in the future, must break up into specialities, and a study of floriculture will not only enunciate this truth, but it will open possibilities of success in more than one direction. There are few farms in which a small glass house could not be made to pay in a great many directions. It is not impossible that a few kinds of flowers or flowering plants could be profitably cultivated, vegetable plants could be raised and sold, and fruits or vegetables could be forced. At all events, it would be a place where seeds could be tested and experiments made every winter, not to speak of the pleasure the family, and especially young people, could get from it in a hundred ways.

Floricultural schools for the special training of florists will be more and more in demand every year. Floriculture is a business which will attract more of the young men of this country from year to year, and of the young women, too, for that matter, for here is one field in which women can excel. But we agree with Professor Bailey, that every student who comes to an agricultural college should receive instruction in floriculture in considerable detail, not for its own sake alone, but as an essential part of the training for every field of rural activity. In short, it offers the soundest discipline for actual farm practice which can be found in the whole curriculum of agricultural teaching.

FOR illustrations of the dangers which follow the stripping of the forest-cover from the elevated sources of streams, we are usually referred to the desolation in the

region of the French Alps, and pictures of the ravage of these mountain-slopes, when scoured by torrents, have become familiar to all. We do not need to cross the seas, however, for object-lessons of this sort, and a singularly striking one was presented at the forestry meeting last week at Albany, by Professor Rothrock, in an illustrated lecture on the relation of forests to the soil. Three streams of about equal length flow in parallel courses from the ridge which forms the rim of the Susquehanna basin into the west branch of the river. The streams are about ten miles apart; they start at about the same altitude; descend with about the same rapidity, and the slopes in the drainage area of each are of similar inclination. Professor Rothrock showed some lantern-slide pictures of the westernmost of these streams, where, in its lower levels, rocks weighing several tons had been swept along by the force of the freshets, while the banks were thickly gullied and bare of vegetation. Successive views up the stream showed the destruction of roads and bridges, and, finally, at the headwaters stretched the bare crest, from which the cover of woods had been all cleared away. In the valley of this stream farm-lands were rapidly losing their fertility, and in a freshet last year thousands of dollars of public property had been destroyed and several lives had been lost. The next stream was flowing gently as a summer brook between banks, a fair percentage of which were clothed with trees up to the very springs at its fountain-head. There had been high water in this stream at the time of the fatal freshet in the first stream, but no property had been injured, no life had been lost, no soil had been scoured from the underlying rock. Along the third stream, from whose sources the timber had also been cut away, the picture of desolation in the first valley was repeated, with the same melancholy history of death and loss. The restrained and equable flow of the second stream is made the more remarkable by the fact that there are destructive torrents on either side of it, with no apparent cause for the difference, except that the trees had been saved in one case, and stripped away in the others. Such facts as these enforce in a convincing way the argument as to the value of the forest-cover as a check upon mountain-torrents and as a means of retaining the soil in its place.

Winter-blooming Plants in the Pines.

A NUMBER of plants have flowered with us all winter. One of the most conspicuous is Sonchus asper, which has not only blossomed all the time, but the seeds have matured, and on pleasant days the ripened heads, with their soft white pappus, have rounded out, and the seed has wafted here and there to further spread this European weed. But, weed as it is, it is not without its attractions. Sometimes the plant was half-buried in snow, but still the yellow heads stood erect, not drooping at all. Dandelions, too, have been in bloom in sheltered places most of the winter, but the seed has not matured. The trim little Draba verna commenced flowering in December, and is still in bloom. It is very pretty, with its thick rosette of small leaves lying flat on the ground, from which arise several branching flower-scapes, and as they elongate with flowering summits they leave behind the flat, roundish seed-pods which are almost as pretty as the flowers. A low dish of these plants, set as close together as they will stand, is an attractive table ornament. The flowers are white and about as large as those of Gypsophila, and any delicate flower from the garden is made doubly beautiful by inserting it among these small spray-like blossoms. The drooping Snowdrop is especially charming among them.

The Shepherd's-purse has tried to blossom during the winter, but, compared with our cheerful little Draba, it has made a melancholy failure. The stems have struggled upward, but the flowers have left only abortive seed-pods. Sweet Alyssum has been in flower all winter, and the perennial Candytuft is almost in blossom. These Cruciferæ, as a rule, are a hardy race, and both the weeds and cultivated plants defy ordinary winter weather.

A Labiate plant, Lamium amplexicaule, has also been in blossom throughout the winter, and has ripened seed. It hugs the ground more closely in winter than in summer. A few pleasant days will lift it up, and its stems will stretch out rapidly, leaving the older whorls of flowers to mature the seed, while it forms new whorls of little pinkish purple flowers, with lower lip spotted with white. Large patches of the common Starwort, Stellaria media, were full of bloom in January, and very handsome, with its spreading stems so thickly covered with leaves as to entirely hide the ground. Interspersed among the leaves the numerous pure white star-shaped flowers were doubly welcome at this season.

Pyxidanthera has been hardly able to wait in patience, and has actually unfolded some of its blossoms now and then all winter long, but the grand opening will be a little later. Andromeda caylyculata was in bloom in January and still continues to flower. Many of the Swamp Maples were red with flowers early in February; other trees of both White and Red Maple still hold their flowers back. The Alders and Filberts have hung out their catkins, but are not yet ready to scatter their golden pollen. Some of the Willows were fully out in February, with insects hovering about the blossoms.

One of the most attractive plants in the garden this winter has been Rosa Wichuriana, which was sent from the Arnold Arboretum. The small, glossy leaves and the dark red clusters of hips, which, like the leaves, look as if they had been varnished, are very handsome and make beautiful table decorations. A few other Roses have more or less held their foliage, notably those with a touch of Rugosa blood. The trailing Forsythia commenced to flower weeks ago, but the cold of late February browned the blossoms as it did those of Pyrus Japonica, whose cherry-red blossoms have greeted us every few days throughout the winter.

In a south window of my dining-room a climbing Nasturtium is growing by the side of a climbing ivy-leaved Geranium. When the main stem of the Nasturtium had reached three feet or a little more, one of the leaves turned away from the light and back again, making the petiole coil around the Geranium and its own main stem, which it hugs closely for support; apparently not satisfied with one coil it turned the second time, making two coils. This is a remarkable case of instinct or intelligence in a plant which causes one of its leaves to turn away from a strong light in order to hold up and sustain itself. It has grown so fast that the stem-spaces between the nodes are from three to four inches in length. The stem has now reached a foot beyond the fastening and needs another support, and to-day a new leaf has made a coil like its predecessor. If all of the leaves behaved in a similar manner it would not appear so strange.

Vineland, N. J. *Mary Treat.*

Exotic Trees and Shrubs for Florida Gardens.—IV.

METROSIDEROS semperflorens, Bottle-brush, Australian Myrtle. I have seen this shrub in full flower in April at Orlando. It grows well in the sandy soil if fertilized and mulched with muck. The flowers are deep scarlet, shaped like a bottle brush; the leaves are small and dark green. The growth is very straggling, and to obtain good specimens judicious pruning is necessary. M. tomentosa, of New Zealand, is a beautiful shrub of dense, compact growth, dark Myrtle-like foliage and striking crimson flowers. I saw beautiful specimens on the World's Fair Grounds in New Orleans, and at Houston, Texas, but on my place in Florida it was a failure. It evidently dislikes the sandy soil and the protracted drought in spring. In its native habitat it reaches a height of thirty to forty feet, and is called the Christmas-tree, as it is at that time in full flower.

Meyenia erecta, from West Africa, will soon be a great favorite in the gardens of south Florida, as it endures full exposure to the sun and produces its handsome blue and white Gloxinia-like flowers in great profusion from May to September, and sprunts readily from the roots when frozen down. This shrub can scarcely be overestimated in value for open-air culture in Florida. It is now included under Thunbergia, but is generally known under the name of Meyenia in gardens.

Myrtus communis, common Myrtle, grows to perfection on moderately good soil. A small plant which was set out in the fall of 1889 is now about five feet high, and the stem near the ground measures seven inches in circumference. M. australis (Eugenia myrtifolia, E. australis) is a fine Australian shrub of dense habit. The specimen on my place looks healthy and vigorous. It needs a little fertilizer and heavy mulching. In its native country it grows to a height

of from six to twelve feet. M. tomentosa, the Chinese Myrtle, is a pretty evergreen shrub from China and northern India. The leaves are dark green, ovate, and downy beneath. The flowers are of a fine rose color. This dense evergreen shrub thrives well in the sandy soil of Florida as far north as Federal Point.

Nerium Oleander is found in almost every door-yard of Florida, thriving vigorously without any care. Mr. F. Barthels, who has charge of my garden, planted a few cuttings of the double rose-colored form in 1888, and the trees are now about twenty-five feet high. All the varieties of the Oleander grow with equal vigor in Florida.

Osmanthus fragrans, Sweet Olive, Tea Olive, of China. This is one of the most beautiful and valuable evergreen shrubs for the extreme south Atlantic and Gulf states. Dense and well-shaped specimens from five to twelve feet high, and almost as much through, excite our admiration. Planted with Michelia fuscata, Gardenia florida, Abelia rupestris, etc., striking groups are formed. If nice and bushy specimens are desired, the pruning-knife must frequently be made use of. Left to itself, the Sweet Olive has an open straggling growth. The plant grows well on high Pineland, if well mulched and fertilized. The small creamy white flowers among the dense foliage appear from early spring until late in the fall, and shed a delicious fragrance.

Santolina Chamæcyparissus incana, of south Europe, is a pretty dwarf evergreen plant. The aromatic leaves are covered with a silvery down. This plant, which thrives to perfection in the state, is very useful for edging and for divisional lines. Rosmarinus officinalis also grows well in the gardens of Florida.

Tabernæmontana coronaria fl. pl, East Indian Rose Bay, grows exceedingly well with a little care. This beautiful shrub is found in the gardens throughout India, but its native country is unknown. In the greenhouses of the north it needs much care and a high temperature, and then is grown with difficulty. In the open air in Florida it attains a height of five feet. The flowers are highly fragrant, double, white, with somewhat wavy edges. Throughout the summer these shrubs are covered with their deliciously scented flowers. The first slight frosts cut the plant down, but in spring, when all danger of frost is over, it again grows on rapidly, and repays all trouble with a wealth of noble flowers.

Tecoma stans, Yellow Elder, Yellow Bignonia, Upright Trumpet-flower, a native of tropical America from the West Indies and Mexico to Peru, is one of the best-flowering evergreen shrubs introduced into Florida. It attains a height of from ten to twelve feet in a season, and in Orlando I have seen specimens fully twenty feet high. It is one of the comparatively few erect-growing members of the Bignoniæ. Flowering as it does from early fall to late in winter, and having a dense upright growth, it should find a place in every south Florida garden. The pinnate leaves consist of five to eleven lanceolate, deeply serrate leaflets, and at the ends of the upright stems immense panicles of large golden yellow tubular flowers appear, often weighing down the stems to the ground. When in flower these magnificent shrubs excite the admiration of even the most indifferent observer. In their form and color the flowers are much like those of the beautiful Allamanda Hendersonii. The yellow Bignonia is very quick-growing; it delights in the sandy soil, and sprunts readily when frozen down. There are several other members of this genus—Tecoma velutina, T. chrysantha and T. Smithi (a hybrid between T. velutina and T. Capensis, raised in Australia)—which will flourish under the same conditions as the foregoing.

Thevetia neriifolia, Trumpet-flower, Yellow Oleander, of tropical America, is a fine Oleander-like plant with yellow flowers and curious fruit. It is one of the best ornamental shrubs for south Florida. The foliage is narrower than those of the Oleander, but the plant is frequently confounded with that shrub. The habit is dense and very ornamental. All parts of the Thevetia are very poisonous. In Orlando I saw beautiful specimens in many gardens.

Milwaukee, Wis. *H. Nehrling.*

Foreign Correspondence.

London Letter.

Rhododendron multicolor was introduced from the mountains of Sumatra by Messrs. J. Veitch & Sons ten years ago, and soon afterward was figured in the *Botanical Magazine*. Plants of it have lately been in flower several weeks in a stove at Kew, and they are quite distinct in habit from all other Rhododendrons, and the flowers are pretty in form and color. The species is remarkable in forming a twiggy dwarf shrub, with long narrow Willow-like foliage in whorls and terminal loose umbels of nodding flowers. These are an inch wide and long, bell-shaped, with five equal ovate corolla-lobes and scarcely any calyx. For garden purposes, what is known as the type is one with primrose-yellow flowers, a second one with bright crimson flowers, being named Curtisii, after Messrs. Veitchs' collector. These plants are happiest under stove treatment. Messrs. Veitch have now numerous hybrids between R. multicolor and other Malayan Rhododendrons, one of which, named Mrs. John Heal, was awarded a first-class certificate by the Royal Horticultural Society last week. It is from the yellow-flowered type crossed with the hybrid Princess Beatrice (the offspring of four species), also yellow-flowered flushed with pink. The new one is remarkable in having pure white flowers, each nearly two inches across, and the plant is evidently very free-flowering. A character peculiar to the R. multicolor hybrids is their close, twiggy habit of growth, suggestive of Azalea Indica, and their free-flowering nature; plants a foot high flower freely. The older Malayan hybrids, such as R. Princess Beatrice, Princess Helena and Prince Royal, grow fairly well in a greenhouse along with Camellias and Himalayan Rhododendrons, but these multicolor hybrids will probably require more warmth. They are a decided acquisition for the indoor garden.

Camoensia maxima is a tropical African climber, of which cultivators have long known enough to create a desire to grow and flower it, but, like some other beautiful tropical plants, it unites a free-growing habit with persistent barrenness in regard to flowers under artificial treatment. I know of big specimens in gardens, one of which has been coaxed and ill-treated and coaxed again at Kew, in the hope that it would relent and flower, but although it grows freely, no matter what the treatment, it shows no sign of flowering. It is, therefore, tantalizing to learn that a small plant sent to Ceylon from Kew in 1883 is now in flower there and is a rival to Amherstia nobilis, which is always in flower. There is a picture of the flowers in the *Transactions of the Linnæan Society*, vol. xxv., a copy of which is published by Mr. Bull annually in his plant catalogue. The plant is a woody evergreen climber, with trifoliate leaves of good substance, and the flowers, according to Dr. Trimen, are erect (not pendulous, as hitherto believed) in axillary racemes, and when freshly expanded the petals are very beautiful, the standard being over seven inches long, the others six inches, all of a delicate pure white thin tissue-like texture, with a narrow yellow fringe-like gold lace. I suspect bright sunlight, and plenty of it, is needed to make this plant flower, and as you have plenty in most parts of America, it ought to prove more tractable with you than it does here. Camoensia is a leguminous genus of two species, and C. maxima was described by Bentham as "much the most striking plant of a suborder (Sophoreæ), which is noteworthy for the beauty of the plants it contains." It was introduced from Angola to Kew many years ago.

Oxalis crenata.—A few weeks ago a box of tubers was received by a Covent Garden salesman from the Azores, unaccompanied by any information except that the sender knew they were good eating, and might "take" in Eng-

land. Not knowing what they were, he sent some to Kew for identification, where they were recognized as the tubers of this Oxalis, which has been tried in France as a substitute for the potato, and which is much esteemed as a vegetable in some countries. The tubers are cylindric, from two to three inches long, thicker than a man's thumb, marked with numerous eye-like depressions, and colored externally bright crimson. They are white-fleshed and sweet to the taste when raw. Cooked they were not particularly palatable, possibly because they had not been properly cooked. According to Vilmorin, this is the "Oka" of the Peruvians, and is highly esteemed in Peru and Bolivia, being largely used there. The tubers are acid when first gathered, but by putting them in woollen bags and exposing them to the action of the sun, in a few days they become floury and sweet. The tubers do not swell till late in the season, and they are not dug until after frost has destroyed the tops. They are planted in May in light rich soil in rows three feet apart. Two varieties are grown in France, the yellow and the red, and a third variety with white tubers has been raised there. The stems of the plants are fleshy, reddish, prostrate, and the leaves are succulent and trifoliate. It is possible that this Oxalis may yet become a favorite vegetable. It is well worth trying. Some of the American experiment stations might take it in hand. The tubers are good to look at, which is a point to be considered in a new vegetable.

Three good Lachenalias.—I mentioned L. aurea gigantea a few weeks ago as a first-rate garden-plant. It is attracting considerable attention here, its rich clear yellow color, tall stout spikes and numerous flowers being exceptional in the genus. It is certain to rank first among Lachenalias, both species and hybrids. It was introduced to Kew two years ago from Port Elizabeth simply under the name of L. aurea. The second in the trio is L. pendula Aureliana, about which an interesting note was published in Garden and Forest last year, page 124. Whatever its origin, it is a superb plant and a most distinct one. An example of it now in flower at Kew has a spike a foot high, bearing a dozen large flowers of a rich red color, not a dull red, but brilliant as Brodiæa coccinea. The leaves, too, are broadly ovate, not linear or strap-shaped, as in other Lachenalias. In the note above referred to, this plant is said to produce as many as forty or fifty flowers on a spike. I have never seen more than twenty-six flowers on a spike of any Lachenalia. Growers of these plants here are busy crossing these newer giants with the older sorts. The third species to which I would direct attention is the form of L. tricolor, called quadricolor maculata, which has tall scapes and large flowers, the outer segments of which are yellow, tinged with red, and the inner green, with a broad margin of brown-purple. These three are now in flower in the Cape-house at Kew. They deserve to be grown in every garden where there is a glass house. The older kinds are pushing up their spikes, and will soon make a brave show, and will keep us going with Lachenalia-flowers till May. That is one of the charms of these plants; they are easily grown, their flowers are pretty and variable in form and color, and they last a long while.

Grammatophyllum Guilelmi II.—Kranzlin. Plants of this new species were sold to-day at an auction sale and were described as resembling G. Measuresianum in habit of growth; its flower-stalk averages two to three feet in length, carrying from twenty to fifty flowers, the individual flowers being some four inches across; the sepals and petals are pale canary-yellow on the outer side, the inner side being almost entirely covered by a bright chocolate blotch, leaving only a narrow rim or margin where the ground is visible; the lip is white, streaked and marked with chocolate; the inside is velvety. In its native habitat it is found growing on trees fully exposed to the sun. This is the fifth addition to this genus made by nurserymen within the past five years. They are all tropical, and, so far as general experience goes, extremely difficult to flower.

London. *W. Watson.*

Entomological.

The Plum Curculio on Apple.

THE very interesting communication of Mr. J. G. Jack, in the issue of Garden and Forest for January 31st, points to a fact to which I have called attention in some of the publications of the New Jersey Experiment Station. That is, while in most of the varieties of apples grown in this state the curculio larva finds it impossible to develop, yet there is at least one, the Baldwin, which, for some reason, will mature the curculio larva as readily as the plum itself. On most varieties of apples the curculio will feed, as described by Mr. Jack, and will also lay its eggs. If the apple remains on the tree the egg rarely hatches. Whether it is that the egg is crushed by the rapid growth of the fruit, or whether the character of the juice is such that it overwhelms the young larva when newly hatched, is not clear; but certain it is, that in those apples that remain upon the tree, even when they are punctured half a dozen times or more, no larvæ can be found. In one case I counted on a half-grown apple thirty-seven egg-punctures, and from not one of them had a larva issued. On the other hand, from every apple that dropped to the ground I was able to breed a larva for every egg-puncture, and the insect finds no difficulty in maturing in apples of any variety after they have dropped from the tree. My suggestion is, that in most cases, and as a rule, the work of the curculio larva does not cause a dropping of the apples; even in the Baldwin I found that apples on the tree infested by curculio larvæ remained attached to the stem until the fruit practically dried up and after it had been abandoned by the larvæ.

This is an important fact, that the attack of the curculio on apple does not cause the dropping of the fruit; but that in dropped fruit the curculio very readily develops. Of course, this points to the recommendation that has been made for other purposes—that the orchard be kept clear of fallen fruit. In New Jersey many growers accomplish this by pasturing hogs, sheep or cattle in the orchard and thus keeping the ground tolerably free. Such orchards suffer comparatively little. It goes without saying that when fallen fruit is gathered from an orchard it should be destroyed, otherwise the larva finds no difficulty in maturing, no matter where the fruit may be piled. Another point of some interest to which I have called attention is, that the range of food-plants of the plum curculio may be larger than we now know of. Two or three years ago I captured specimens of the beetle on the June-berry, Amelanchier canadensis, and on many of the berries found the characteristic egg-punctures, while still others had been almost entirely hollowed out by what was certainly a curculio larva, and probably of this particular species.

Rutgers College. *John B. Smith.*

New or Little-known Plants.

Cercidiphyllum Japonicum.

A FIGURE of this remarkable tree appears in the illustration on page 106 of this issue, the first which has ever been published, in which Mr. Faxon has worked out the structure of the flowers and fruit from material for which I am indebted to Professor Miyabe, of the Agricultural College at Sapporo, in Yezo.

In Cercidiphyllum* the leaves on sterile shoots are either alternate or opposite; in their axils small acute red buds, covered with four to six thin scarious slightly imbricated scales, are formed early in the autumn. The branchlet ends during the winter in a small scar between two buds when the leaves are opposite, and at the side of a single bud when the leaves are alternate. Early in the following spring the buds develop short spur-like, almost obsolete, branches, which produce a single leaf and terminal flow-

* Siebold & Zuccarini, *Abhand. Akad. Münch.* iv., pt. iii., 238.—*Flora*, 1847, 729. Walpers, *Ann.*, i., 364.—Maximowicx, *Mél. Biol.*, x., 367.

ers. Later a bud is formed in the axil of the leaf, which, on fruit-bearing trees, appears between the leaf and the stalk of the fruit-cluster. The branches, therefore, in their second and third years appear to be clothed with opposite or alternate leaves, although the leaves are in reality produced on lateral branches. The leaves are involute and coated on the lower surface in the bud with pale caducous pubescence, and are furnished with lanceolate, acute, caducous stipules slightly connate toward the base. The staminate and pistillate flowers are produced on separate individuals, the staminate subsessile, solitary or fascicled, the pistillate solitary and pedunculate. The staminate flower is composed of a minute scarious calyx divided to the base into four acute apiculate divisions, and of an indefinite number of stamens; the filaments are slender, elongated and inserted on a conical receptacle; the anthers are oblong-lanceolate, attached at the base, apiculate by the prolongation of the narrow connective, and two-celled, the cells opening longitudinally throughout their length. The pistillate flower is composed of a membranaceous calyx divided into four unequal sepals laciniately cut on the margins, and of four or sometimes of five or six carpels inserted by their oblique bases on a prominent pyramidal receptacle; they are gibbous and acute on the ventral suture, and straight and rounded on the dorsal suture, and are gradually narrowed into elongated slender styles stigmatic on their inner faces below the middle; the ovules are inserted in a double row on the placenta and are descending and anatropous. The fruit is a cluster of two to six, more or less spreading oblong stipitate follicles tipped with the persistent styles and splitting through the ventral suture, which by a twist usually becomes external. The pericarp is thick, light brown and lustrous, and is separable into two layers; the outer layer is thin and membranaceous, and the inner layer is hard and woody, and lustrous on the inner surface. The seeds, which are closely imbricated, in two rows, are pendulous, compressed, nearly square, attached obliquely, and covered with a thin light brown membranaceous coat, which is produced into an elongated terminal wing three times as long as the body of the seed, and slightly narrowed at the apex. The embryo is axile in copious fleshy albumen, with plane cotyledons about as long as the slender, superior radicle turned toward the hilum.

The affinities of Cercidiphyllum are with the Asiatic genera, Euptelia and Trochodendron, which were united by Bentham and Hooker into their tribe, Trochodendræ, in Magnoliaceæ.* By Prantl† Cercidiphyllum is placed with Euptelia and Trochodendron, in his new family, Trochodendraceæ, which is, perhaps, as satisfactory a disposition as is likely to be made of these genera, which, in several characters, resemble one another, but are not very closely connected with Magnolia.

In the last volume of GARDEN AND FOREST the illustration on page 53 (Fig. 9) represents a noble specimen of Cercidiphyllum Japonicum growing in the forest near Sapporo, on the island of Yezo. That on page 107 of the present issue represents the upper portion of another tree in the same locality, and shows the numerous slightly spreading stems and the small pendulous branches which this tree usually produces in its native forests. *C. S. S.*

Cultural Department.

The Cultivation of Violets.

THE best time to propagate Violets, in my opinion, is from the middle to the end of April, when the plants finish blooming. Some growers divide the old plants to single crowns, and plant them outdoors at once, while the greater number of cultivators prefer runners for new stock. I have tried both methods, and find that while the plants grown from single crowns are larger, the flowers produced from runners are superior in size, of a darker color, have larger and stiffer stems, and are much more numerous.

To produce good Violets it is quite unnecessary to commence propagating any earlier than I have suggested. Violets resent coddling, and a great many failures are caused by too early propagation and carrying the runners in heated houses during a large part of the winter. It is neither necessary nor desirable to have large clumps in the fall of the year. A small plant with one good crown will give good blooms, and more of them in proportion to the ground occupied, than a plant composed of several crowns. When our plants are done blooming we insert the runners quite thickly in well-drained boxes of sand, and place them in a shaded cold frame close up to the glass. Air is freely admitted at all times, watering carefully attended to, and few runners fail to take root.

From the beginning to the middle of June we plant out the runners in rows between Currant and Gooseberry bushes, allowing a foot between each plant. They are well watered when set out, and no further attention is given them until lifting-time beyond the necessary hoeing, weeding and removing of runners. The Violets are set between rows of fruit-bushes to economize space, and they will do fully as well in any open space in a batch by themselves. If the ground is moist, all the better, and a shaded location is not necessary.

We lift our Violets about September 1st. Except a few which are grown in eight-inch pots on a shelf in the Carnation-house, they are all placed in cold frames. Our frames face almost due south, which does not give the conditions recommended by many Violet-growers. In the bottom of the frames we place nine inches of well-rotted manure, and over this a compost composed of loam, chopped leaves, half-rotted cow-manure and about a half-barrow-load of sand is used to a sash. The loam, leaves and manure are in equal proportions. Twenty-four plants are placed in a sash. A thorough soaking of water is given after the planting, and watering is carefully attended to as it is required. Sashes are not placed over the plants until frost is expected. In November we pack the sides of the frames with dry leaves to the thickness of eight inches; by this means, with the aid of mats and shutters, frost is kept out when the temperature is below zero. A freezing will not injure the plants, but it is advisable to let them thaw out before exposing them to sunlight. Snow must not be allowed to lie on the frames for more than two or three days at a time, and the plants should be aired at every suitable opportunity. They should be gone over at least once a week, and all decaying and diseased foliage be removed. Watering must not be neglected; more Violets are ruined by being kept too dry than too moist. During this winter I find that our plants were watered once in December, twice in January, three times in February, and every three or four days in March. Liquid-manure is applied from February onward. The watering must be done on the morning of a clear, bright day, and the plants must not be wet from overhead during the winter months. After the middle of March the watering may be done in the evenings. During the early part of March we give our sashes a coat of lime-wash; this is not only beneficial to the plants, but the flowers do not lose their color so rapidly.

Since the middle of October we have picked Violets at least once a week, and at this time are getting an average of 500 flowers from each sash during a week. For our main crop we grow only Marie Louise, and have had no spot on it for the past two seasons. Swanley White and The Czar, growing side by side, spotted quite badly last August, and as applications of Bordeaux mixure did not remedy the trouble the plants were not lifted. For a late supply we grow the Double Russian, which does not give much bloom until the middle of March. There is no variety equal to Marie Louise, if it can be well grown, but to those who are not successful with it I would recommend Lady Hume Campbell, which I have seen in very fine condition this winter. Though paler in color than Marie Louise, the flower is of large size, very fragrant, and much superior to Neapolitan. The Czar, Wellsiana and Victoria Regina are useful single varieties and of good color, and a limited number of these are worth growing for their foliage alone, as the leaves on Marie Louise are never very large.

We find that Violets succeed better in a compost such as we are using this season, than in a stiffer and heavier soil used in previous years. If flowers are wanted during the entire winter from cold frames, as sunny a location as possible must be selected, and as Violets are moisture-loving plants they must never be allowed to become at all dry at the root.

The roots of Violets are considerably injured in lifting in the fall, and we purpose avoiding root-disturbance by planting a few sashes with runners in June and watering them well all

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* *Gen.*, i., 954.
† Engler & Prantl, *Pflanzenfam.*, iii., pt. ii., 21.

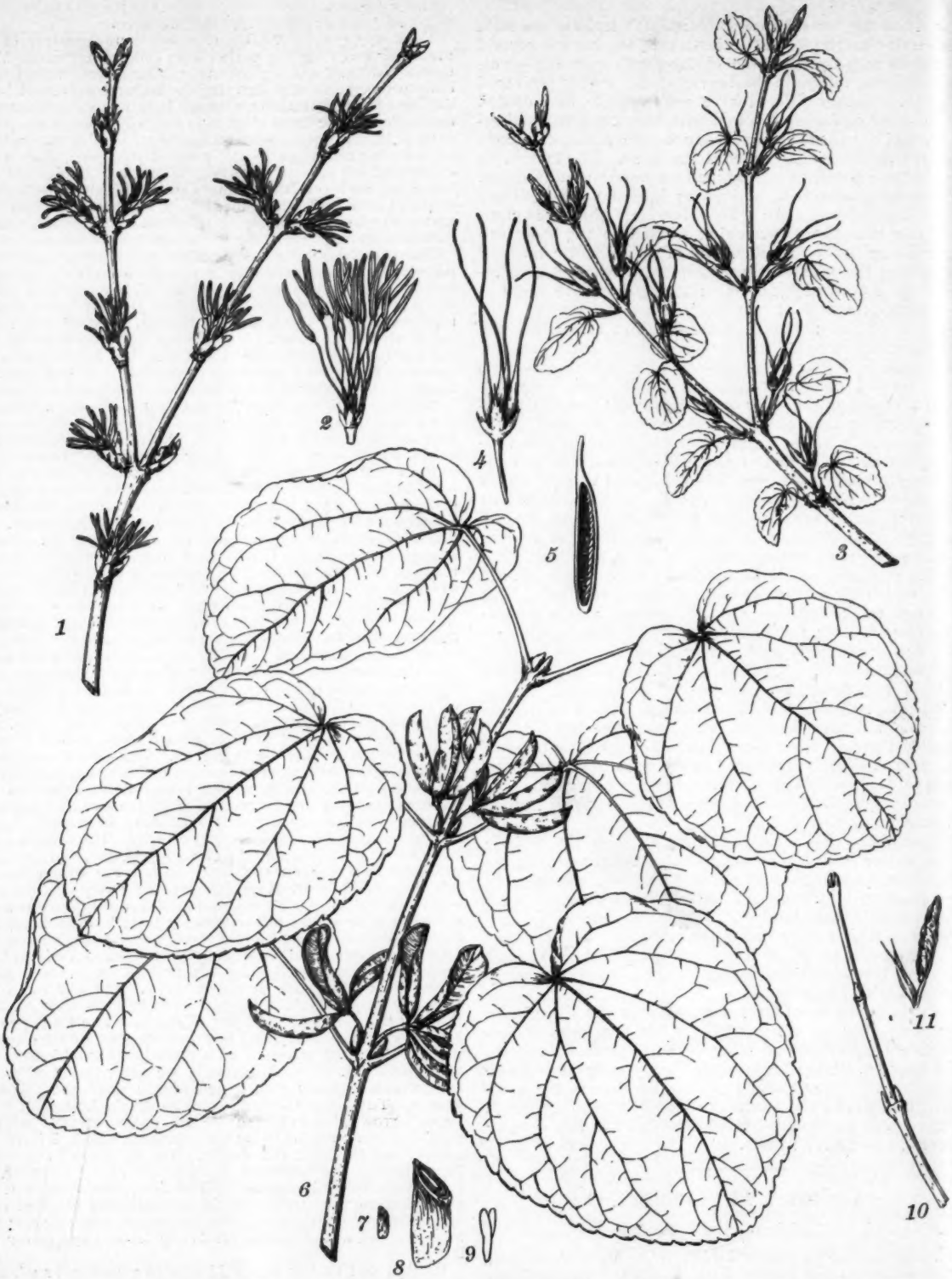

Fig. 21.—Cercidiphyllum Japonicum.—See page 104.

1. A flowering-branch of the staminate tree, natural size.
2. A staminate flower, enlarged.
3. A flowering-branch of the pistillate tree, natural size.
4. A pistillate flower, enlarged.
5. Vertical section of an ovary, enlarged.
6. A fruiting-branch, natural size.
7. A seed, natural size.
8. Cross section of a seed, much magnified.
9. An embryo, magnified.
10. A winter branchlet, natural size.
11. A leaf unfolding with its stipules, enlarged.

Fig. 22.—Cercidiphyllum Japonicum.—See page 124.

summer. The sashes will be used when the heavy dews and rains of August and September set in, for these start the spot. A near-by market friend follows this plan, and his plants are spotless and the blooms are excellent. As frames are much in demand for other crops during the early summer months, many growers will be slow to make this experiment unless strong proof can be given of the benefits to be derived.

Taunton, Mass. *W. N. Craig.*

Imantophyllum miniatum.

THIS is a plant more often seen in old gardens than in those of recent origin; in other words, it is considered an old-fashioned plant. There are too many such that we rarely meet, although they are sometimes made popular by a sudden freak of fashion, and every one then sees how real merit has been unsuspected or forgotten. Clivia nobilis and C. miniatum are very old garden-plants, and under these names were much grown at one time, then almost forgotten, until a set of hybrids of improved color and size appeared to awaken fresh interest in them. Clivia is still the correct name, but as Imantophyllum has become so well fixed in gardens, it has been retained for every-day use.

The newer varieties are as yet quite rare, owing to the slow means of propagation, by division only, and the consequent high price. It also happens that as soon as they become known, the demand equals the supply, and this helps to keep the price high. It is easy to raise seedlings of a plant impregnated with its own pollen when in flower; it takes about a year, however, to mature the seed, and three or four years more to get the plants to flowering size, but it is interesting work, and gives one something to look forward to. The Imantophyllum belongs to the Amaryllideæ, but will not cross with the Amaryllis proper. At least, such has been my experience, while others have succeeded in raising hybrids from Eucharis and Urceolina, both genera of the same order.

As decorative plants the Imantophyllums rank high. The broad, dark green, strap-shaped foliage is ornamental at all seasons, while the bright orange-red of the flowers, which are produced in the early spring months, are most useful, owing to their lasting qualities, distinct color and long stems. An ordinary greenhouse temperature of fifty degrees is best suited to these plants, though young ones may be nursed along in a warmer house. Strong sunshine is injurious even at this time of the year, and causes the foliage to lose its healthy dark green color and to become a sickly yellow. A shady position is, therefore, essential. We sometimes place them under the benches when not in active growth. Repotting is best done in spring, but the plants should not be disturbed often at the roots. A good sound potting-soil is best—a mixture of loam, made porous with powdered charcoal and sand, with a little bone-meal added as a fertilizer of long-lasting properties. Young growing plants require repotting annually, but those of flowering age may be examined once in two years, and this will be found often enough, unless the drainage is found to be at fault.

South Lancaster, Mass. *E. O. Orpet.*

Orchid Notes.

WE are living in a time which may be looked back upon some day as the palmy days of Orchid-culture. It does not seem possible that these plants could be more popular than they are at present, nor that they can hold many more surprises in store for us. When, however, the collector fails us with new and startling Orchids, we shall still have the hybridist to depend upon, and with the abundant material at his command we may confidently hope that new plants of real merit will still be produced.

As they have flowered, the merits of most of the recently introduced Orchids have been noted here, and now another is in bloom with us for the first time. As a distinct Cypripedium, C. Chamberlainianum has some merit, though more, perhaps, for the hybridist than for the ordinary cultivator. Last fall I saw a plant in bloom in a celebrated collection, and was told that this was an excellent variety, and this opinion is now confirmed by the plant in bloom here. The slipper is very different from that of any other member of the family, being bright rose-colored, covered with minute spots. It is the redeeming feature, the dorsal sepal being green, with ill-defined black lines, and the lateral petals are slightly twisted and also spotted with black or very dark brown. C. Chamberlainianum is a very free grower, but requires the moist heat of the warmest house. Thus far, only one flower has opened at a time on the many-flowered stem, and the distance between the open flower and the next succeeding bud is considerable—too much to warrant us in expecting to see more than one flower open at the same time.

In the collection of Mrs. F. L. Ames at North Easton, Massachusetts, there has flowered during the past two seasons Cypripedium insigne Sanderæ, admitted to be the most beautiful of all Cypripediums by all who have seen it. C. insigne Sanderæ is but a form of a very old Orchid, but one more lovely does not exist in cultivation. The green and brown of C. insigne is wholly absent, and the upper sepal is a clear bright yellow, with a pure white apex. This variety is a chance introduction among the ordinary forms of C. insigne, and is, of course, very valuable. It is hoped, however, that more plants of the variety will appear, as the great quantities of C. insigne which have been imported with this end in view, come into flower. Should there be no more forthcoming from their native wilds we have still the satisfaction of knowing that, under the skillful treatment of Mr. W. Robinson, at North Easton, the plant increases twofold each year. Of course, it is very rare in commerce at present.

Boston. *Plantsman.*

Annual Flowers from Seed.—V.

TORENIA FOURNIERI is one of those flowers "with an aristocratic and high-bred air" which will always attract attention in the largest collection. It can be unreservedly recommended as a garden-plant, especially to those who are fond of the less garish and obtrusive flowers. The plants are small, much-branched, usually under a foot high, and every shoot has one or more flowers, velvety rich royal purple, shading to blue, with yellow throats. There are also Torenias with white and with yellow flowers. It is usual to raise these plants from seed sown in the greenhouse, but as I have had abundant crops of plants from self-sown seed in the open, I think that seed sown in a frame outside would germinate successfully. The seeds are very small, and should have the merest trifle of covering.

In sharp contrast to these we have lastly the Zinnias, "such coarse flowers." There is not much delicacy of petal or grace of form in the Zinnia, but there is nothing else among the annuals which will give such a wealth of color in a garden as a well-grown plant of Zinnia. Marvelous colors mark some of them, in tints not seen in other flowers, and these colors are no mere suggestions eluding one, but are laid on the petals in honest solid masses. I like the Zinnias, and like them big. They are not only cheerful in the garden, but cut in bold pieces they lighten up the dark corners of a room finely, though, perhaps, they are hardly in keeping with a sentimental corner.

From the list I have given, individual readers will miss some favorite annuals, but those reviewed seem to me in most points the more desirable ones for general cultivation. Those omitted mostly appeal to some special fancy. I have made little note of two things on which inquirers usually dwell with some persistence; these are fragrant flowers and plants for foliage—"greens" in the vernacular. As to the first, there are, of course, other fragrant flowers, as the Stocks, which are lumpy stuff, but a fair proportion of the flowers are more or less fragrant, and if others are not, and a touch of odor is desired, it seems better to add a piece of the inconspicuous Mignonette rather than add some flower of a conflicting form of beauty; several odors blended seem to me a crude mixture in a bouquet.

Nature does not seem to have adapted any annual plants to the wants of bouquet-makers, or at least there are none which are especially desirable for this purpose. Those who must have some foreign foliage for their flowers must continue to use Iris leaves with their Fuchsias or some such abominable combination as is customary in otherwise civilized communities. Of course, every one knows how to arrange flowers, and nothing seems to trouble the color-blind less than the composition of a bouquet, providing the assortment of flowers is sufficiently large. We have all seen the process, commencing by reducing any inordinate length of stem and ending with chaos. Arrangements of one kind of flower, and not many different tones of these, or at most of two species of flowers of complementary colors and harmonious forms, will furnish difficulties which will sufficiently tax the artistic capabilities of most of us. Beyond this is safe ground only for those with a trained appreciation of the value of form and color. Vulgarity and bad taste may be expressed by flowers as well as by other things which appeal to our sense of form and color, and the key-note of flower arrangements should be simplicity. Grow all favorite flowers in abundance, and if each variety is gathered with a generous share of stem and foliage they quite arrange themselves. We are apt to overdo bouquets in the way of foliage, that gathered with the flowers being often sufficient. Where

a plant does not supply satisfactory foliage, of course one should use something not more bold than is natural to the plant. It also does not seem exactly right to use something which has a dissimilar association. For instance, shade-loving Ferns are out of character with flowers which are full of color and sunlight, though this would not offend those to whom flowers are merely ornamental objects.

Elizabeth, N. J. *J. N. Gerard.*

Correspondence.

To Protect Lake-shores.

To the Editor of GARDEN AND FOREST:

Sir,—Can you or any of your readers inform me of the best means of preventing the falling away of the banks on an island in a fresh-water lake, where the extent of shore renders the building of a sea-wall entirely too expensive? The soil is light and sandy and is pulled down more by the effect of frost and rains than of waves, but is also exposed in places to wave action. Would the planting of Willows preserve the banks? If so, what variety is best for the purpose? If Willow-seed were planted as late as July 15th, would the plants be likely to survive the winter of northern New England?

Derby.

[A bank such as our correspondent describes can be saved from washing by planting Willows and other shrubs, which can be faced on the water-side by bulrushes and other moisture-loving herbaceous plants. Probably no better shrubby Willows could be selected for this purpose than some of the native species which may be found in the local swamps and wet places. The narrow-leaved Silky Willow, Salix sericea; the Petioled Willow, S. petiolaris, and the Heart-leaved Willow, S. cordata, are among the best for such use. The Glaucous Willow, S. discolor, will also thrive in such situations, but it grows taller than the other species. Small plants may be moved from their native habitat and planted near the margin of the pond, and some of their branches may be bent over on each side and layered deeply, and in this way a mass of plants would be speedily obtained. Or cuttings from one to two feet long may be taken in the autumn or spring. These cuttings should have their lower ends shoved ten to twelve inches into the soil. They may be planted pretty thickly together, as not all of them are likely to grow. Cuttings of some of the foreign species of Willow, like the Basket Willow, form roots more readily than some of our indigenous species. Of course, cuttings are better than seeds. Besides the Willows, Alders may be found a good protection for the banks of ponds in some situations; and our native Button-bush, Cephalanthus occidentalis, will thrive and hold the soil in places so wet and boggy that even Willows and Alders will not grow. The way to assured success from plantings of this character is to study the undisturbed natural banks of a lake in the same region, noting the plants that are found associated together in such situations and then reproducing, as far as possible, the effects produced in nature. A mere list of herbaceous and other plants that could be used to hold the banks of a lake in any given locality would be of little practical value, for such plants can rarely be obtained from nurseries, and have to be collected from their native wilds.—ED.]

Meetings of Societies.

Forestry Congress at Albany.

THE forestry meeting at Albany last week was particularly successful in the number of representative men from different states and from different associations who took part in it, and in the practical quality of many of the papers read. On the first evening Mr. Fernow delivered an illustrated lecture, entitled "The Battle of the Forest," which showed in a graphic way how the forest, after millenniums of struggle, conquered its way to a full possession of the earth until man began to make inroads upon it. Pictures of the desolation which followed the wasteful use of the axe in the Adirondacks and other parts of the United States were most instructive, as were the views of the ruin wrought in the French Alps, where the removal of the forest-cover had let the torrents loose to work their will. Very instructive, too, were the pictures of the costly work of the forest-engineers of the French Government now in progress to repair the damage which their own improvidence had invited, works which we shall need to duplicate with equal expense unless we heed this warning. Another illustrated lecture was given by Professor Rothrock on the relation of forests to the soil, and some of its pictorial lessons are mentioned editorially on another page. Among other pictures which taught important lessons were two views of a White Pine forest on land which Professor Rothrock himself remembers to have been a barren sand-hill thirty years ago. The trees now stand about seven feet apart, with tall straight trunks fifteen inches in diameter two feet from the ground. A lecture by Professor Bickmore was also illustrated with views of forest-scenery selected for their beauty. A carefully prepared paper by Mr. Gifford Pinchot set forth the difference between forestry and lumbering with the application of the subject to the North Woods. The paper is too important to be dismissed in a sentence, and we shall treat of it more fully in a future number. The paper of Mr. H. B. Ayres on forest-fires was so compact that we shall be able to publish it in full next week.

At the first day's meeting the reports from the various states were unusually interesting. Professor Rothrock spoke for Pennsylvania; Professor Smock, director of the State Geological Survey, spoke for New Jersey; Secretary Gold, of the State Board of Agriculture, for Connecticut; Secretary Moses, of the Forest Commission, spoke for New Hampshire; Secretary Appleton, of the State Board of Agriculture, spoke for Massachusetts; Colonel Fox for New York; Mr. William Little for Canada, and Mr. R. U. Johnson, of this city, being an honorary member of the Sierra Club, was asked to represent California, and made one of his vigorous pleas for the salvation of the Yosemite National Park. He offered a resolution, which was adopted, approving the national policy of setting apart forest-reservations and endorsing the McCrea bill, which provides a plan for administering these reservations. The readers of this journal need not be informed that the measures which have been taken in the states named and in others for administering their woodlands are altogether inadequate for the needs of the time; but these reports did seem to show a gradual improvement in the tone of public opinion in this matter. This does not sound like a very decisive step toward reformation, but it is the first step which costs, and, beyond question, the only way to assured success is to start with enlightening public opinion.

Among the other notable addresses at the meeting was an off-hand speech by Bishop Doane, in which he lamented the fact that the Adirondacks were becoming something like a fashionable resort, which was to be occupied by the same set of people who tried to amuse themselves at Newport and Lenox at different seasons of the year. When visitors come away from the alleged camps in the woods with vivid memories of porcelain bath-tubs he feared that the contact of these people with nature was not so intimate as it should be, and he feared, furthermore, that society would fatally injure the woods before the woods had an opportunity to regenerate society. At the same session, Dr. Ford, of the Climatological Society, spoke of the prophylactic and therapeutic value of camp life in the woods against what is known as American nervousness—that exhaustion of vital force which affects so many of our countrymen. He knew of no treatment for this disease which could compare with a few weeks in the thick woods of the western Adirondacks.

The only subject which caused any discussion was a resolution favoring in one section the purchase of the lands within the boundary of the proposed state forest, which was approved, as was also the section advocating the issue of bonds for a million dollars, and a third section restricting the selling of outlying parcels of state land to such areas as are fitted and desired for agricultural purposes. For the next section, which favored the policy of the commission as set forth in their report, Mr. Fernow offered a substitute to the effect that no timber of any kind shall hereafter be cut and sold from the state lands until a comprehensive and systematic plan of management has been devised and such methods of supervision instituted as will ensure the permanence of the forest-cover and the reproduction of the valuable kinds of timber. An additional section affirmed that the practice of cutting all the Spruce above twelve inches in diameter does not ensure in all cases immunity from the danger of seriously interrupting the forest-cover and is apt to impair the future of all the forest. Both of these propositions seemed to the best-instructed portion of the meeting entirely proper, but they were strenuously ob-

jected to by Colonel Fox as a criticism on the commission, which would possibly lead the legislature to refuse the appropriation of a million dollars, which he thought the commission needed. After much argument on both sides, in which no one attempted to explain why the executive officers of the forest-commission had made no attempt to devise such a plan of management as had been advocated by Mr. Fernow, and which he said an expert could prepare in four weeks, a substitute for both resolutions was offered and apparently adopted without debate. So far as we are able to understand it, this substitute has no positive meaning whatever.

It seemed to many of the friends of the Adirondacks that the commission were unduly eager to sell some Spruce-trees in order to show a little revenue. The people of the state generally see through matters of this sort, and it is not to be assumed that the collection of a few hundred dollars will hurry them up to hand the desired millions into the hands of the commission. They certainly will not make great haste to do this if it is pointed out to them that the method, or lack of method, which is used in cutting the Spruce can be shown to be injurious to the forest. Suppose the commission should follow the advice of Messrs. Fernow and Pinchot, and formulate some plan to begin on, and show this plan to the people instead of the money which they get from a few Spruce-trees at nine cents or more apiece. Such a course might give them an established position in the confidence of the people, and, perhaps, it might be the best way to secure an appropriation, as it certainly would be the safest way to treat the forest.

Notes.

The herbarium of the late Dr. C. C. Parry, containing some 16,000 specimens in excellent condition, has been purchased by the trustees of the Iowa Agricultural College, at Ames, Iowa.

The old homestead of Abraham Lincoln's family, in Larue County, Kentucky, has been purchased by a syndicate of Kentuckians, who intend to have the place laid out as a park, and then present it to the Government for public use.

Among some bits of timely counsel which Mr. William Scott gives to the readers of the *American Florist* is the advice not to throw away a pan of Canna-seeds because only a few plants have germinated. Pot off those which are a few inches high, and keep the seed-pan warm and moist, and plants will continue to appear for months.

Of the Roses grown for cut flowers in the open air on the Riviera nine out of every ten are Safranos, although this variety is rarely grown under glass. The capital merit of the Safrano is that it will bloom and develop buds at a temperature which is too low for any other Tea Rose. We have seen old plants of this Rose grown out-of-doors in the latitude of New York which have passed through several of our severe winters unharmed, with no protection beyond a thin covering of straw bound about them.

The leading article in the issue of *Gartenflora* for February 15th is the first of a series, written by Dr. Wittmack, on the commercial gardening establishments of the United States. It deals at considerable length and in a spirit of great admiration with the establishment of Mr. William K. Harris, of Philadelphia, who operates twenty-two houses, each one hundred feet in length, and devotes himself chiefly to the growing of Chrysanthemums, Carnations, Palms, Cycads, Araucarias, India-rubber plants and ornamental foliage-plants of various sorts.

Private letters from the interior of Plymouth County, Massachusetts, say that there has been much distress among the people there this winter, as, owing to the hard times, there has been no market for the cord-wood and White Pine logs upon the sale of which they largely depend for winter support. Most of the Pine logs cut in this region are used for box-boards; and just now the owners of box-board mills only venture to cut logs from their own lands, leaving the majority of the wood-choppers unemployed, and cutting off the usual revenues of the proprietors of wood-lots.

The *Red Bluff News* states as an example of the possibilities of fruit-growing in northern California that eighteen years ago two cuttings of the Purple Fig were pushed down into the soil at the foot of the Coast Range in the western part of Tehama County, since which time they have had no attention, except protection from stock for a few years. For fifteen years they have borne and grown until now each trunk measures eight feet in circumference, the branches form a dome forty feet high and one hundred and eighty feet in circumference, while the lower branches, which rest on the ground, have taken root and sent up shoots which are twenty-five feet high.

An Indiana correspondent asks what varieties of Grapes we should advise for home use. There is no general answer to such a question which would apply to all parts of the United States. We are inclined to accept the judgment of Mr. E. Williams, of New Jersey, that for the east the best black grape is Worden; the best red grape, Brighton, and the best white grape, Niagara. The Illinois Experiment Station, from tests made in a location not so remote from our correspondent's home, recommends, in addition to these, Moore's Early for black; Delaware, Lindley and Massasoit for red; Grein's Golden, Elvira and Green Mountain for white. These are all good Grapes and succeed over a wide range of territory.

Writing of Galax aphylla in a recent number of the *Bulletin of the Torrey Botanical Club*, Mr. A. A. Heller says: "We are often surprised at finding coast-plants growing upon the higher mountain-tops of the south, but here is a reversal of affairs. On June 8th this plant was collected about two miles east of Suffolk, Nansemond County, less than forty miles from the extreme coast-line of Virginia," at only about fifty-three feet above sea-level. "According to my own observations in the mountains of North Carolina," the writer adds, "the plant hardly descends to 2,000 feet, and is most abundant at about 4,000, rarely being found much higher. Wherever Galax occurs to any extent there is a peculiar odor, somewhat suggestive of polecats. This odor was very noticeable at the Suffolk station."

More beautiful roses are rarely seen than some cut blooms of Catherine Mermet, which were offered last week at Brower Brothers' at six dollars a dozen. At the same place we also saw the first Trailing Arbutus of the season, as well as some sprays of forced Japanese Snowball, which were very effective. Sweet Peas of extra quality were selling for fifty cents a dozen. Plants of Rhododendrons and Azaleas in flower are abundant, and Hydrangeas in magnificent bloom are just coming on. A few plants of one or two kinds of Erica are so attractive that one wonders why more of them are not grown. Acacia retinodes is now seen as frequently as A. dealbata. Tree Pæonies, forced into bloom, have been occasionally seen in market here before, but they are rare enough to be called novelties, and they make a really beautiful display.

Professor Britton thinks that botanists will be interested to know that the herbarium of Stephen Elliott, upon which he based his *Sketch of the Botany of South Carolina and Georgia*, published between the years 1816 and 1824, is preserved in the museum of the College of Charleston, where it is accessible to students. He says that "it is in a moderately good state of preservation, although some portions of it have been damaged by insect depredations. It contains, besides Elliott's own collections in the region covered by his book, many specimens from Schweinitz, Rafinesque, Torrey, Oakes and Muhlenberg, and from his colleagues, Drs. Baldwin and Macbride and Mr. Gourdin. The representation of material from Muhlenberg is probably more extensive than in any other collection in America, and this is a most important circumstance, because Muhlenberg's own herbarium, in charge of the American Philosophical Society at Philadelphia, is in very bad order, imperfectly preserved and not very easily consulted."

The limited supply of strawberries received from Florida last week, and their generally superior quality, raised the price to sixty cents a quart in the markets, while exceptionally fine berries were offered in the fruit-stores for as much as seventy-five cents a pint cup. Besides the grapes grown in American, English and Belgian glass houses, which may be had here throughout the year, the only grapes now offered are Almerias, costing from twenty to forty cents a pound, and Catawbas, which are still being forwarded from the interior of this state, and these, although of fair quality, are cheaper now than they were a month ago. California Pears are still held in cold storage, and choice Winter Nelis and P. Barry bring a dollar and a half a dozen, Easter Beurre costing somewhat more. The few King of Siam oranges have a price of their own far in advance of all the other citrous fruits, and two dollars a dozen is asked for them. The markets are now well supplied with a large variety of vegetables, from which no item of the summer supply is missed, excepting sweet corn. California, Mexico, Cuba, Bermuda, Denmark and Africa regularly send fresh vegetables, and large supplies come from Louisiana, Florida and other southern states as the season advances, while every year the market-gardeners in the north are enlarging their glass structures and adding new vegetables to the long list which they already force.